FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 28 to May 4, 2013 (Week 18)

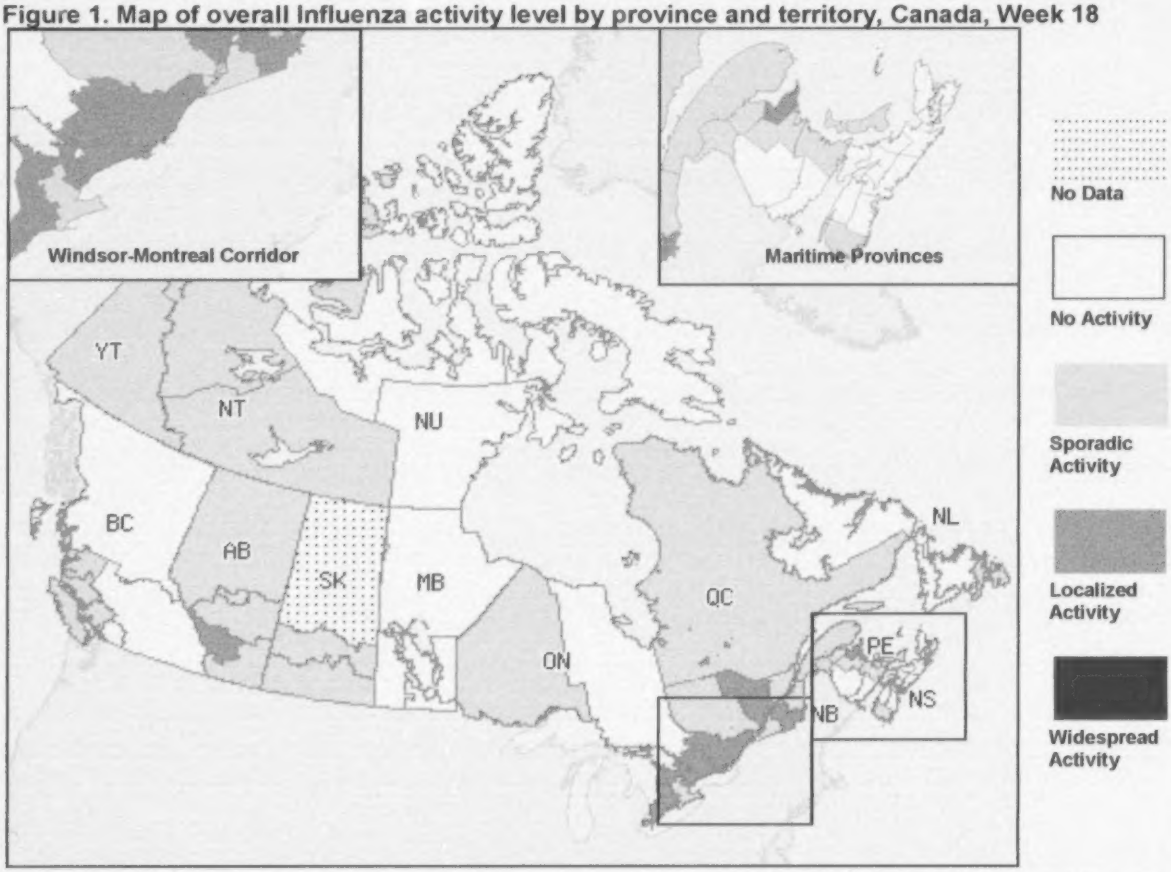
Overall Summary

- Influenza activity in Canada continued its slow decline in week 18, with the percentage of laboratory tests positive for influenza at 10%. Influenza B was the predominant strain, but detections continued to decrease.
- Detections of rhinovirus continued to increase, while detections of other respiratory viruses were stable or decreasing in week 18.
- The ILI consultation rate increased slightly and was above the expected range. However, fewer regions reported localized activity compared to the previous week.

Influenza Activity (geographic spread) and Outbreaks

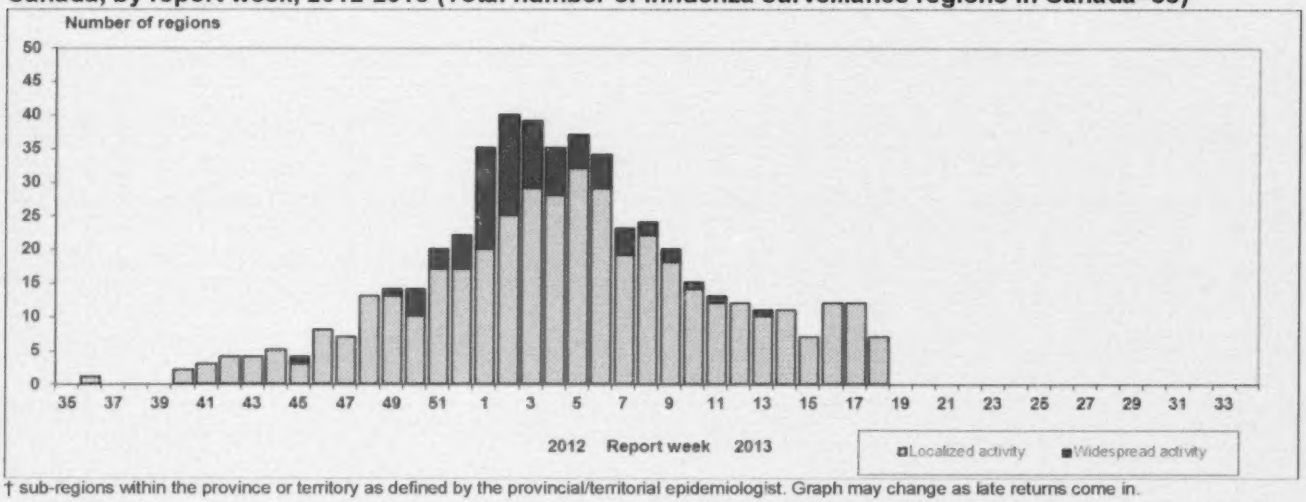
In week 18, seven regions [AB(1), ON(4), QC(1) and NB(1)] reported localized activity and 25 regions reported sporadic activity. The number of regions reporting widespread or localized activity decreased compared to the previous week (Figures 1 and 2). Six new influenza outbreaks were reported: five in long-term-care facilities and one in a school (Figure 3).

Figure 1. Map of overall influenza activity level by province and territory, Canada, Week 18



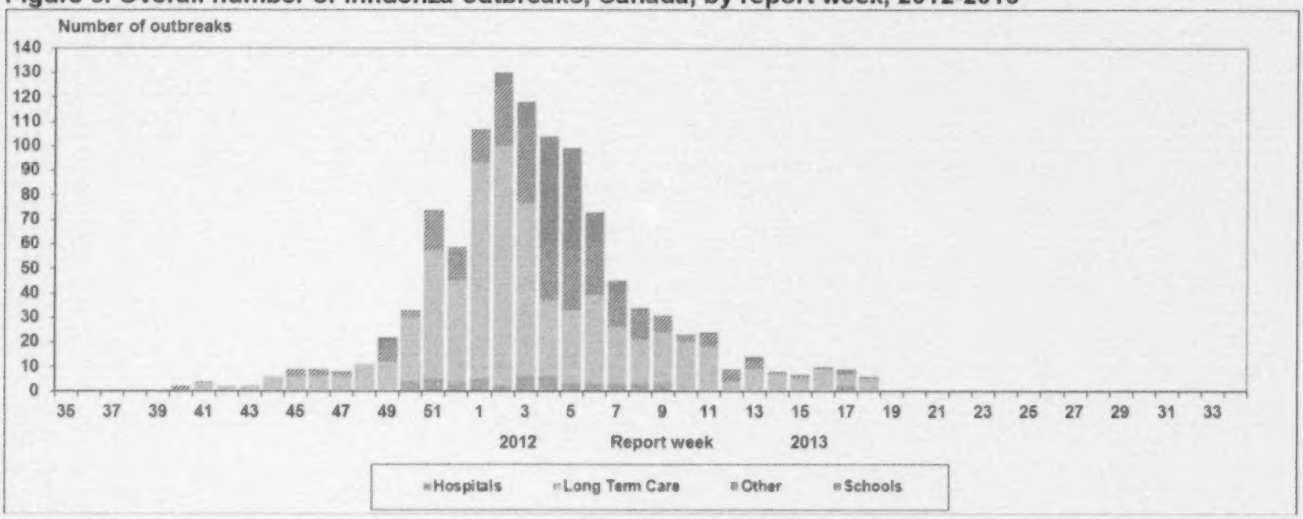
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2012-2013 (Total number of influenza surveillance regions in Canada=58)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2012-2013



Influenza and Other Respiratory Virus Detections

The overall percentage of positive influenza tests decreased slightly compared to recent weeks, from 11.2 in week 17 to 10.0% in week 18. Detections of influenza B decreased for the second consecutive week, and represented 86.4% of total positive influenza detections in week 18 (Figure 4). Among the influenza viruses detected in week 18 (n=301), 13.6% were positive for influenza A viruses [of which 48.8% were A(H1N1)pdm09, 9.8% were A(H3), and 41.5% were A(unsubtyped)] (Table 1). Cumulative influenza virus detections by type/subtype to date are as follows: 86.5% influenza A [34.5% A(H3), 4.6% A(H1N1)pdm09 and 61.0% A(unsubtyped)] and 13.5% influenza B (Table 1).

Detailed information on age and type/subtype has been received for 23,888 cases to date this season (Table 2). The proportion of cases by age group is as follows: 14.1% <5 years; 9.9% between 5-19 years; 15.7% between 20-44 years; 17.0% between 45-64 years of age; 43.2% ≥65 years.

The percentage of positive tests for rhinovirus increased from 12.5% in week 17 to 14.1% in week 18, and has been slowly increasing since week 01. The percentage of positive tests for parainfluenza (5.4%) was stable since week 16, but has been increasing gradually over the past 10 weeks. The percentage of tests positive for respiratory syncytial virus (RSV) (4.5%) continued its decline from a peak in week 08. The percentage of positive tests for human metapneumovirus (hMPV) (5.0%) has been stable since week 16, and the percentage of positive tests for coronavirus (0.8%) has been decreasing slowly since week 04 (Figure 5)*.

* For more details, see the weekly Respiratory Virus Detections in Canada Report.

Table 1. Weekly and Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2012-2013

Reporting provinces	Weekly (April 28 to May 4, 2013)						Cumulative (August 26, 2012 to May 4, 2013)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	3	0	1	2	0	11	1907	0	1450	218	239	397
AB	7	0	2	4	1	40	2347	0	1766	437	144	748
SK	2	0	0	0	2	27	836	0	476	73	287	285
MB	0	0	0	0	0	2	657	0	78	10	569	84
ON	7	0	1	4	2	57	8248	0	3778	369	4101	843
QC	12	0	0	2	10	109	9797	0	546	35	9216	1768
NB	6	0	0	6	0	13	1859	0	771	71	1017	60
NS	0	0	0	0	0	1	388	0	165	8	215	7
PE	2	0	0	2	0	0	116	0	76	9	31	1
NL	2	0	0	0	2	0	717	0	152	0	565	16
Canada	**41**	**0**	**4**	**20**	**17**	**260**	**26872**	**0**	**9258**	**1230**	**16384**	**4209**

*Unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2012-2013*

Age groups	Weekly (April 28 to May 4, 2013)					Cumulative (Aug. 26, 2012 to May 4, 2013)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	5	2	0	3	32	2674	214	861	1599	706
5-19	0	0	0	0	34	1455	66	639	750	908
20-44	4	1	0	3	23	3170	339	1217	1614	586
45-64	4	2	0	2	27	3463	312	1233	1918	597
65+	2	0	0	2	45	9611	132	3713	5766	718
Unknown	0	0	0	0	0	166	20	144	2	1
Total	**15**	**5**	**0**	**10**	**161**	**20539**	**1083**	**7807**	**11649**	**3516**

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2012-2013

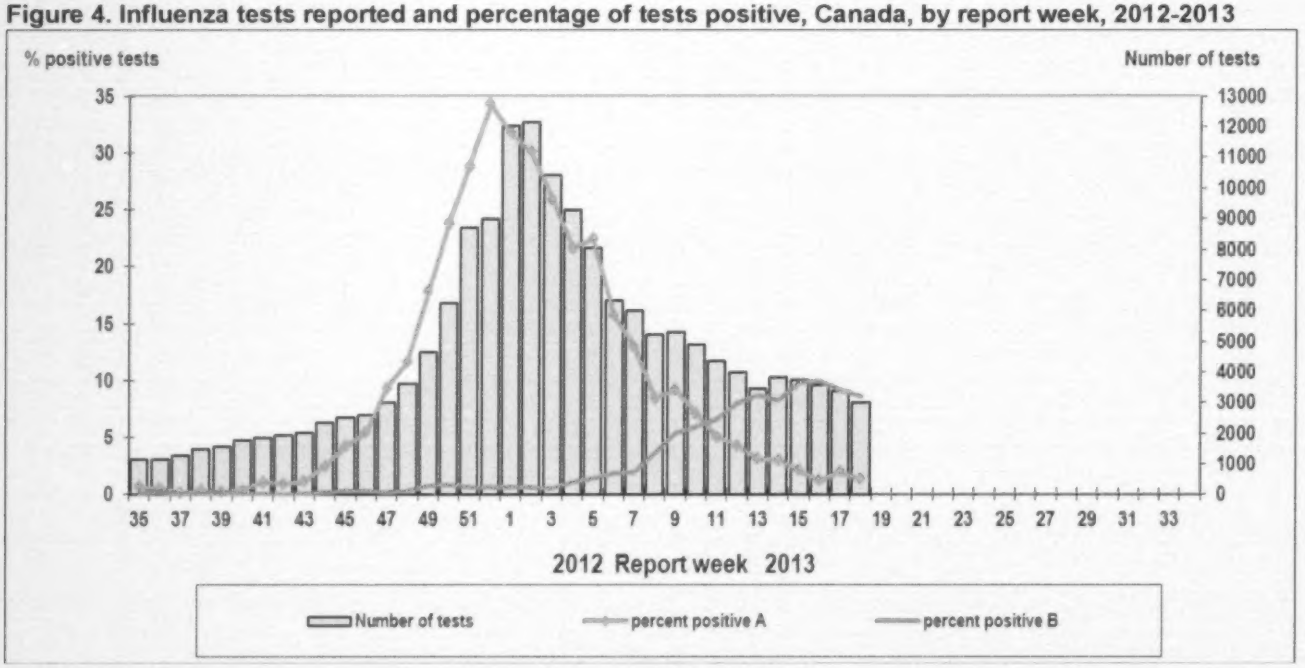
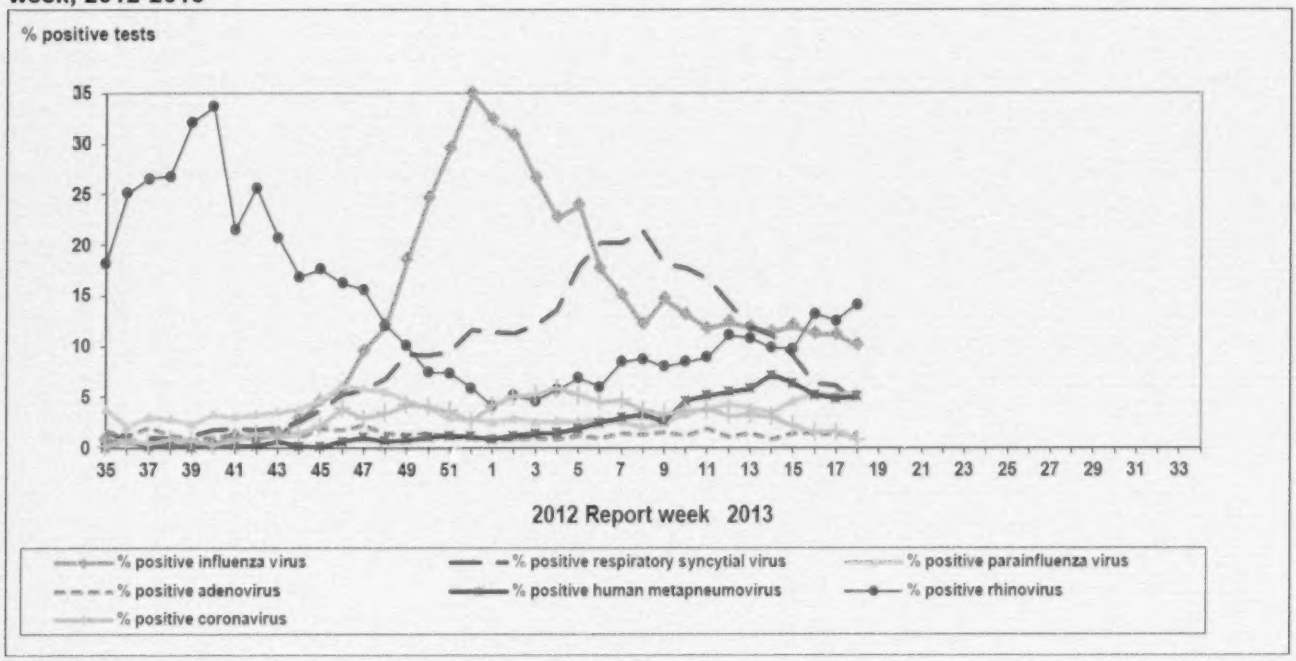


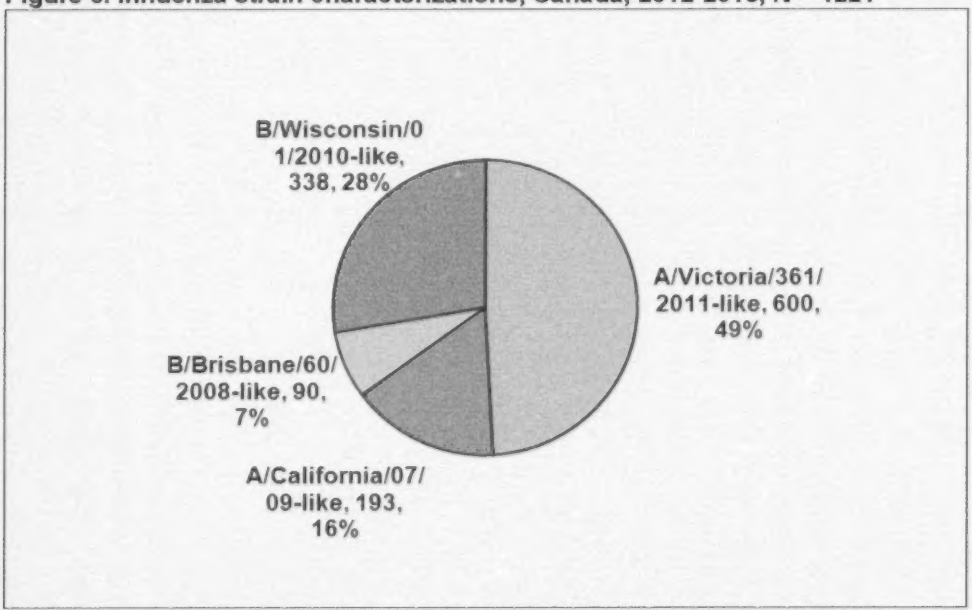
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2012-2013



Influenza Strain Characterizations

During the 2012-13 season, the National Microbiology Laboratory (NML) has antigenically characterized 1221 influenza viruses. The 600 influenza A(H3N2) viruses were antigenically similar to the vaccine strain A/Victoria/361/2011 and the 193 A(H1N1)pdm09 viruses were antigenically similar to the vaccine strain A/California/07/09. Among the influenza B viruses, 338 were antigenically similar to the vaccine strain B/Wisconsin/01/2010 (Yamagata lineage) and 90 were similar to B/Brisbane/60/2008 (Victoria lineage; component of the 2011-2012 seasonal influenza vaccine) (Figure 6).

Figure 6. Influenza strain characterizations, Canada, 2012-2013, N = 1221



Note: The recommended components for the 2012-2013 Northern Hemisphere influenza vaccine include: an A/Victoria/361/2011 (H3N2)-like virus; an A/California/7/2009 (H1N1)pdm09-like virus; and a B/Wisconsin/1/2010-like virus.

Antiviral Resistance

During the 2012-13 season, NML has tested 1149 influenza viruses for resistance to oseltamivir, and 1145 influenza viruses for resistance to zanamivir. Among these, one A(H3N2) virus was resistant to oseltamivir and zanamivir. A total of 1180 influenza A viruses were tested for amantadine resistance and all but one were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2012-2013

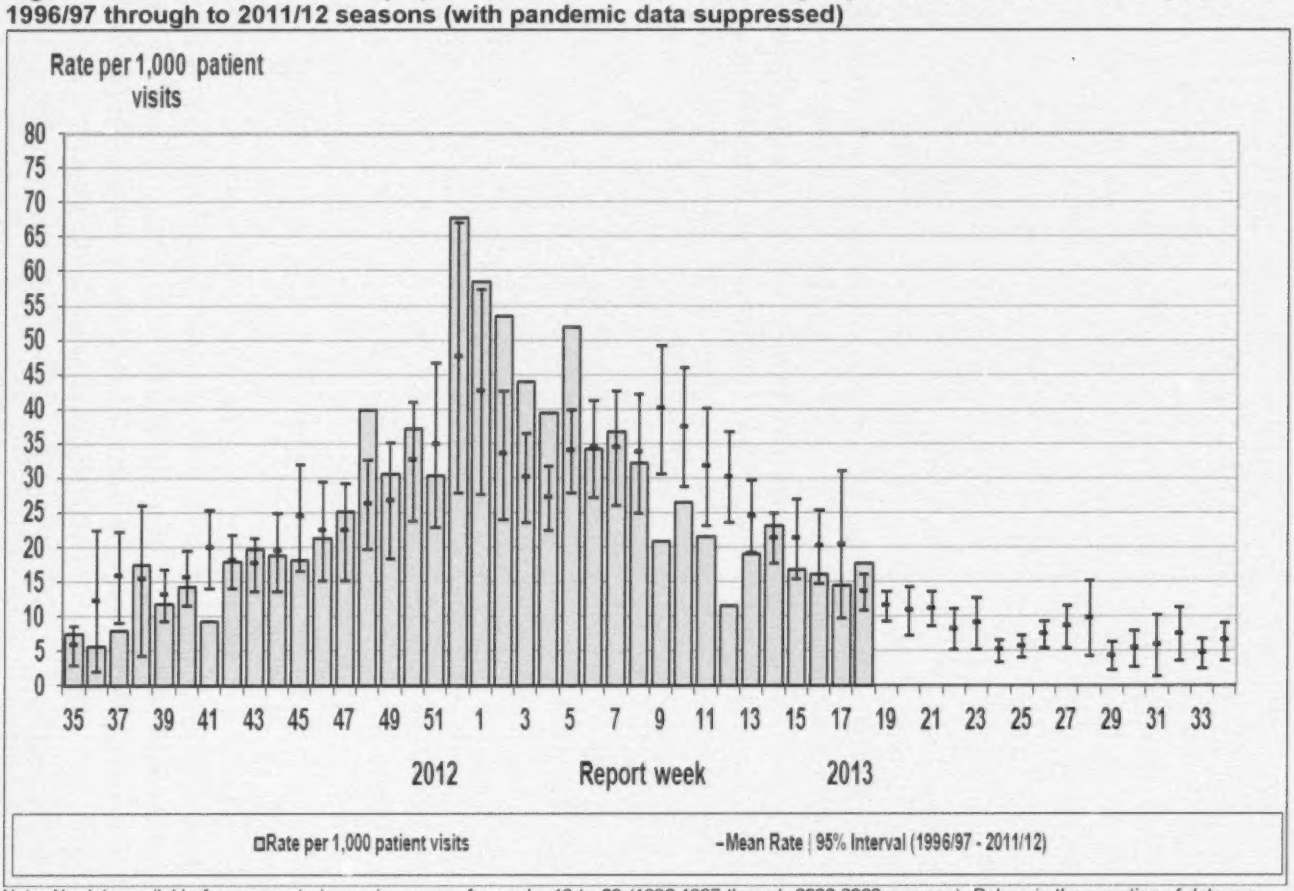
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	572	1 (0.2%)	573	1 (0.2%)	955	954 (99.9%)
A (H1N1)	194	0	190	0	225	225 (100%)
B	383	0	382	0	NA*	NA*
TOTAL	1149	1 (0.1%)	1145	1 (0.1%)	1180	1179 (99.9%)

* NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 14.5 ILI consultations per 1,000 patient visits in week 17 to 17.6 / 1,000 in week 18, and is above the expected range (Figure 7). In week 18, the highest consultation rate was observed in children under 5 years of age (63.2/1,000).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2012-2013 compared to 1996/97 through to 2011/12 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 18, 16 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 15 in week 17. All of the cases reported in week 18 were identified with influenza B. The age distribution is as follows: 3 (18.8%) between 0-5 months, 2 (12.5%) between 6-23 months, 4 (25.0%) 2-4 years of age, and 7 (43.8%) 5-9 years of age. Two cases were admitted to an intensive care unit (ICU) during week 18, one child 2-4 years of age and one 5-9 years of age; both with influenza B. No deaths were reported in week 18.

Since the start of the 2012-13 season, a total of 855 influenza-associated paediatric hospitalizations have been reported by the IMPACT network: 621 (72.6%) with influenza A [of which 120 (19.3%) were A(H3N2), 25 (4.0%) were A(H1N1)pdm09 and the remaining 476 were A(unsubtyped); and 234 (27.4%) with influenza B. The distribution of cases by age group is as follows: 157 (18.4%) <6 months of age; 199 (23.3%) age 6-23 months; 244 (28.5%) age 2-4 years; 183 (21.4%) age 5-9 years; and 72 (8.4%) age 10-16 years. Ninety-two (10.8%) of the 855 cases were admitted to the ICU. Of the 70 ICU admissions with available data, 60 (85.7%) cases had at least one co-morbidity. One death has been reported to date this season in a child 6-23 months of age with an underlying condition, with influenza B.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

PCIRN-SOS surveillance has concluded for the 2012-13 influenza season. In week 18, eight laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network. All eight hospitalizations were cases of influenza B; three cases were ≥65 years of age, two were 45-64 years, two were 20-44 years and one was <20 years of age. Two ICU admissions were reported, both cases with influenza B; one ≥65 years of age and one 45-64 years of age. No deaths were reported in week 18. Only nine of the 17 PCIRN centres reported data in week 18. A summary of final data will be included in the 2012-13 FluWatch annual report.

From November 4, 2012 to May 4, 2013, 1,779 influenza-associated adult hospitalizations were reported by the PCIRN-SOS network: 1,620 (91.1%) with influenza A [of which 310 were A(H3N2), 19 were A(H1N1)pdm09, and 1,291 were A(unsubtyped)]; 113 (6.4%) with influenza B, and the type has not been reported for 46 cases. The age distribution of hospitalizations is as follows: 1,212 (68.1%) were ≥65 years of age, 364 (20.5%) were 45-64 years, 194 (10.9%) were 20-44 years, and 9 (0.5%) were <20 years of age. ICU admission was required for 214 hospitalizations; the majority of which were adults ≥65 years of age (124; 57.9%). Of the ICU admissions, 90 (42.1%) had at least one co-morbidity, five (2.3%) had no co-morbidities, and 119 had no information to date. A total of 115 deaths have been reported: 26 with influenza A(H3N2), one with A(H1N1)pdm09, 82 with A(unsubtyped), five with influenza B, and one untyped. More than 85% of the deaths (98/115) were in adults ≥65 years of age, 14 (12.2%) were adults 45-64 years of age, and 3 (2.6%) were 20-44 years of age. Fifty-two (45.2%) deaths occurred in individuals who had at least one co-morbidity. Detailed clinical information on co-morbidities is not known for the remaining cases.

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Provincial/Territorial Influenza Hospitalizations and Deaths (Aggregate Surveillance System)

In week 18, 69 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*. The majority of cases were influenza A (56.5%). The highest proportion of hospitalisations were in adults ≥65 years of age (40.6%), followed by children 0-4 years of age (21.7%). Of the 17 cases with available data, six cases were admitted to the ICU, three with influenza A(H1N1)pdm09 and three with influenza B; four were ≥65 years of age, one was 45-64 years of age, and one was 5-14 years of age. Two deaths were reported in week 18, both adults ≥65 years of age with influenza A.

To date this season, 4,733 influenza-associated hospitalizations have been reported, of which 89.1% have been influenza A. Of those subtyped (48.8%), influenza A(H3) was the predominant influenza strain. The cumulative proportion of hospitalizations with influenza B continues to increase (10.9% in week 18). Age information was available for 4,730 cases, and the age distribution is as follows: 2,518 (53.2%) were ≥65 years of age; 789 (16.7%) were 45-64 years of age; 429 (9.1%) were 20-44 years of age; 40 (0.8%) were 15-19 years of age; 228 (4.8%) were 5-14 years; and 726 (15.3%) were 0-4 years of age. Of the 1,293 cases with available data, there have been 204 hospitalisations for which admission to an ICU was required; the highest proportions have been in adults 45-64 years of age, followed by adults ≥65 years of age (35.8% and 34.3%, respectively). To date, 297 deaths have been reported: 245 adults ≥65 years of age, 35 adults 45-64 years; 11 adults 20-44 years, one child 5-14 years of age, and 5 were children 0-4 years of age. It is important to note that the cause of death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

Note*: The number of new influenza-associated hospitalizations and deaths reported by the Aggregate Surveillance System each week may be overestimated, as it may include retrospective updates to data from Ontario for previous weeks. These data may also include cases reported by the IMPACT and PCIRN networks. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not reported in Ontario.

International Influenza Updates

WHO: No new influenza surveillance update was available from the WHO since the report dated 26 April 2013.
World Health Organization influenza update

United States: During week 17, influenza activity decreased. Puerto Rico and three states reported regional influenza activity, and 6 states reported local activity. The national percentage of outpatient visits for ILI was 1.0%, which is below the national baseline. All 10 regions reported ILI below region-specific baseline levels in week 17. The percentage of deaths due to pneumonia and influenza has been below the epidemic threshold for the past four weeks, and was 6.6% in week 17. The proportion of tests positive for influenza viruses declined to 6.5% in week 17. Of the positive influenza detections, 66.7% were influenza B. Since October 1, 2012, the CDC has antigenically characterized 2,317 influenza viruses. Among influenza A(H3N2) viruses, 1,264 (99.7%) were A/Victoria/361/2011-like, and 4 (0.3%) showed reduced titers to A/Victoria/361/2011 antiserum. Among influenza A(H1N1)pdm09 viruses, 231 (98.7%) were A/California/7/2009-like, and 3 (1.3%) showed reduced titers to A/California/7/2009-like antiserum. Among influenza B viruses, 546 (67.0%) were B/Wisconsin/01/2010-like belonging to the Yamagata lineage of viruses; and 269 (33.0%) to the B/Victoria lineage. Two (0.4%) A(H1N1)pdm09 and two (0.1%) A(H3N2) oseltamivir-resistant viruses have been reported to date this season. Among the 12,314 influenza-associated hospitalizations reported to date this season, 79.2% were associated with influenza A of which 96.0% were A(H3N2), and approximately 50% were among adults ≥65 years. A total of 137 influenza-associated paediatric deaths have been reported to date this season, 62 with influenza A, 73 with influenza B and one with both influenza A and B.
Centers for Disease Control and Prevention seasonal influenza report

Europe: In week 18, the vast majority of countries reported low intensity of ILI/ARI activity and a decreasing trend. In the 4 countries reporting results of 20 or more sentinel specimens, a median of 7% were positive for influenza in week 18. The proportion of influenza B detections has increased from 24% in week 03 to 66% in week 18. Among influenza A viruses in week 18, 67% were A(H3N2) and 33% were A(H1N1)pdm09. Since the beginning of the season, 63% of detections from sentinel and non-sentinel sources were influenza A [67% A(H1N1)pdm09 and 33% A(H3N2)] and 37% were influenza B. Among the 697 A(H1N1)pdm09 viruses tested for resistance to oseltamivir from 12 countries, 13 (2%) were found to contain the H275Y mutation. The number of hospitalizations for severe acute respiratory illness (SARI) and the number positive for influenza have returned to pre-season levels in most participating countries.
EuroFlu weekly electronic bulletin

Emerging Respiratory Pathogens

Human Avian Influenza
Influenza A(H7N9): Between May 3 and May 9, the WHO reported an additional 5 cases and 6 deaths associated with avian influenza A(H7N9) in eastern China. The public health risk posed by avian influenza A(H7N9) from China to Canada remains low at this time. Since March 2013, 131 cases and 32 deaths of avian influenza A(H7N9) have been reported from eight provinces and two municipalities. The number of cases (and deaths) by jurisdiction is as follows: Anhui 4 (1), Fujian 5 (0), Henan 4 (0), Hunan 3 (0), Jiangsu 26 (5), Jiangxi 5 (0), Shandong 2 (0), Zhejiang 46 (6), Beijing 1 (0), Shanghai 34 (12) and Taiwan 1 (0). The locations of eight deaths have not yet been disclosed. More than 1,800 close contacts of confirmed cases are being closely monitored. Some of the confirmed cases had contact with animals or with an animal environment. Investigations into the source and route of transmission are still in progress, but there has been no evidence of ongoing human-to-human transmission. The WHO is in contact with national authorities and is following the event closely.
PHAC – Avian influenza A(H7N9)
PHAC – A(H7N9) risk assessment
WHO – Influenza at the human-animal interface
WHO – Disease Outbreak News
WHO – Frequently Asked Questions on human infection with influenza A(H7N9)

Human Swine Influenza
No new human cases of infection with swine influenza viruses or variants were reported in week 17.
Centers for Disease Control and Prevention seasonal influenza report

Novel Coronavirus (HCoV-EMC/2012)
Since 2 May 2013, nine new cases of novel coronavirus (HCoV-EMC/2012) have been reported by the WHO. Eight of the new cases are part of an outbreak involving seven other cases reported on 1 May 2013. Since the beginning of May 2013, a total of 15 patients have been reported from this outbreak, of which seven have died. An ongoing investigation has determined the cases to be linked to one health care facility. Of the 15 patients, 12 are men and three are women. The age range of the patients is from 24 to 94 years old. One new case not associated with the

outbreak (reported 8 May 2013) was confirmed in France, and preliminary investigation reveals that the patient had a history of travel to Dubai, United Arab Emirates. Since April 2012, 33 cases of laboratory-confirmed HCoV-EMC/2012 have been identified, including 18 deaths. Most patients are male (81.3%; 26 of 32 cases with sex reported) and range in age from 24 to 94 years (median 56 years). The first cases had onset of illness in late March or early April 2012; the most recent case reported had onset on 1 May 2013.

PHAC – Novel coronavirus (HCoV-EMC/2012)
PHAC – HCoV-EMC/2012 risk assessment
WHO – Coronavirus infections

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2012-2013 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2012-2013 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Influenza Activity Levels Definition for the 2012-2013 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles.